CHILTON'S THE
ELECTRONIC
ENGINEER

1971 ANNUAL EDITORIAL INDEX

Issue Index

January

		Page
Thank-you, but the work is only starting	Alberto Socolovsky	7
1971: The year of conversion	Staff report	21
What's available in MSI?	Larry Beck & Walter Richard	25

IC Ideas

Sweep circuit has triggered, free-run modes	Chuck Ulrick	38
Fault monitor checks for circulating logic bit	Robert Serody	39
Zero-beat detector	Tim K. Aaltonen	40
Delay circuit makes handy timer	G. Detlof	40
Op amps give mutually-exclusive Digital sequencing	Maxwell Strange	41
Simple-to-make toggling flip-flop	Thomas P. Benzie	42
A staircase waveform generator	Jim W. Foltz	42
One video amplifier: Three oscillators	Michael English	43
Function generator has variable polarity exponents	Michael Neeland	44
Digital gain control for op amps	William E. Peterson	44
Feedback eliminates switch contact transients	Velkko O. Jaakola	45
One-shot triggers on both edges of input	Ken Erickson	45

February

The electronic State of the Union	Alberto Socolovsky	7
Guide to air moving devices		17
Diaphragm connection -- a new package for complex ICs	Alberto Socolovsky	27
The great video cartridge race	Arthur J. Boyle & John McNichol	38
Memories: a new six part course, Part 1	Stephen A. Thompson	45
Varieties of storage		46
The memory as a black box		48
Inside the black box	Donald H. Gibson	48
EBS amplifiers debut	Sheldon Edelman	52

IC Ideas

Eliminate glitches from the outputs of high speed decoders	Robert Lindskog	56
Monostable multivibrator generates word gate	V.R. Godbole	56
A simple 4-phase clock pulse generator	J.V. Sastry	58
Solid state sine/cosine generator	J. Rodney Cox	58

March

Write to your Congressman	Alberto Socolovsky	6
A sign of the times -- IEEE 1971	Lynda Rothstein	17
Rx for an ailing industry: keep it simple	John McNichol	25
Crowding the gas readout tube		30
Memories: Types of memory, Part 2	Stephen A. Thompson	39
Classification of memories	Philip Harding, Richard Bravo & Andres Lucero	39
Crash, bang, it still works	Jack Hickey	57
Shift registers as memories	Dale A. Mrazek	53

March continued

IC Ideas

Programmable pulse generator . . . . . Paul H. Scott 53
Triggered ramp generator . . . . . Harry Garland 53
Display the flags . . . . . John T. Hannon Jr. 54
One NAND one-shot . . . . . .Bob Leserve 54

April

A few hopeful signs . . . . . Alberto Socolovsky 7
Designer's guide to multilayer boards 17
There is an EE in the White House . . . . . .John McNichol 27
A giant step for power supplies . . . . . .Jack Hickey 38
Memories: Magnetic mainframes, Part 3 . . . . . Steve Thompson 45
Core: the mainframe standard . . . . . Chris Maeder 45
Plated wire . . . . . .Paul Zakarian 47
Magnetic film memories . . . . . C.M. Levken 50
Linear transformer ROM . . . . . J. Furst 54
Powering your ICs . . . . . .Jack Hickey 59

IC Ideas

Hybrid one-shot has logic input and bipolar output . . . . Walter G. Jung 66
Convert to active circuit trimming . . . . . J. Agnew 66
Simple digital PLL circuit synchronizes clock signals . . . . . Charles A. Herbst 67
Circuit detects minimum levels and slow transition times . . . . . Steven R. Martin 67

May

Conversion--whose responsibility is it? . . . . . Alberto Socolovsky 6
A guide to high value capacitors 17
Appointment in Washington . . . . . .Neil R. Regeimbal 25
Data collection: registering retail sales without bells. . . .Sheldon Edelman 47
Memories: Mainframes - Part 4 . . . . . Steve Thompson 53
M-dimensional, N-wire organizations . . . . . Ed Lindell 53
Semiconductor memories . . . . . L.L. Vadasz, H.T. Chua & A.S. Grove 56
MOS memories . . . . . Warner R. Bridwell 58
Hybrid: The best of both worlds . . . . . .D. Lund & T. Kwai 61
Optical ROMs . . . . . Robert L. Burr 63
Speed up card tests with a computer . . . . . .Richard J. Sungaila 67

IC Ideas

Clock pulse generator . . . . . Brian Carpenter 76
A finite number pusle source . . . . . Eliezer Sheffer 76
Predictable R-S flip-flop . . . . . .A.J. Roshon 78
A low-cost differential line receiver . . . . . R. Bogart & J. Buchanan 78

June

When the potatoes are passed around . . . . . Alberto Socolovsky 6
Speed/power chart for digital ICs . . . . . Lynda Rothstein 24
They've got connections . . . . . Smedley B. Ruth 29
Cable communications: the Los Gatos experiment . . . . . Sheldon Edelman 41
Computer control comes to network testing . . . . . Arthur J. Boyle 46
Memories: Bulk storage, Part 5 . . . . . Steve Thompson 49
Punched paper cards . . . . . Dr. J.A. Carlson 49
Paper tape 50
Magnetic tape . . . . . Edward S. Kinney 51
Optical/thermal mass-memory . . . . . Harold Dell 52
Magnetic discs . . . . . William Bertrando 53
The silicon drum . . . . . Dale A. Mrazek 55
Dynamic MOS RAMs for bulk memories . . . . . B.D. Broeker 57
Domain Wall memory . . . . . Berne D. Broadbent 58

IC Ideas

Zero crossing detector uses logic gates . . . . . Stuart Culp 70
Sinusoidal frequency halving . . . . . Marvin K. Vander Kool 70
Frequency divider from a clocked R-S flip-flop . . . . . Jozef Sabol 71
Speed up your precision rectifier . . . . . Allen Cole 71

July

A breath of fresh air in data communications . . . . . Alberto Socolovsky 6
OP AMP charts go on-line . . . . . A. Boyle, L. Rothstein & D. Wilkins 21
Will EE join the war on pollution? . . . . . John McNichol 33
Memories: Putting them all together - Part 6 . . . . . Steve Thompson 43
Segmented hierarchial memories . . . . . R.V. Bock 43
Paged hierarchial memories. . . . . Roger Cormier 45
Interfacing with memories . . . . . Dale Pippenger 47
Memories in displays . . . . . A. Maurer 49
Minicomputers and controllers . . . . . Stephen A. Kellis, Jr. 51
ROMs as logic . . . . . John Linford 53

IC Ideas

An easy way to measure offset and bias currents. . . . . Jack Goldberg 56
Inexpensive divider extends range of 10-MHz counter to 100 MHz . . . . . R.L. Starliper 56
Addition and comparision in one operation. . . . . John T. Hannon, Jr. 58

August

Let's not kill a good thing . . . . . Alberto Socolovsky 6
Update '71: Oscillators and function generators at a glance . Sheldon Edelman 25
Oscillators and function generators 27
Memories: Future storage techniques - Part 7 . . . . . Steve Thompson 33
Picking the winning technologies . . . . . Jack A. Morton 33
Magnetic bubbles. . . . . Andrew H. Bobeck 36
Data communications - Regulation reoriented . . . . . Bernard Strassburg DC-3
The evolution of an industry: data communications . . . . . Max Beere DC-6
Data terminals: a five-part course - Part 1 Battle of the bits . . . . . Alberto Socolovsky DC-7
Data communication - Getting it from here to there . . . . . Arthur J. Boyle DC-9

August continued

IC Ideas

Amplitude modulator uses an IC multiplier . . . . . .Dan Sheingold 68
Dual op amp makes simple sine wave generator . . . . . Hank Olson 70
A digital 90·rf phase shifter . . . . . G.K. Shubert 68
Current amplifier circuit . . . . . H. MacDonald 70

September

Look abroad for growth at home . . . . . Alberto Socolovsky 6
More capacitance, less volume: an international story . . Alberto Socolovsky 20
Quadrature filters: wht they are and what they do . . . . . Martin A. Weiner 35
Antenna selection guide 49
Design opportunities for EEs . . . . . Stuart L. Mathison DC-3
Data terminals - Part 2 . . . . . Arthur J. Boyle DC-5
Character generation using MOS read-only memories. . . . . Richard M. Eiler DC-6
How the ROM generates characters . . . . . Michael R. McCoy DC-9
Select the right CRT for alphanumeric data terminals . . . . . A.J. Johnson DC-10
Integrated line drivers and receivers. . . . . Dale Pippenger DC-13
Magnetic tape for data terminals . . . . . R.H. Kearns DC-14
Keyboard considerations for design engineers . Don Arnett & Du Wayne Pople DC-18
The monlithic keyboard . . . . . .Frank Yoerg DC-16
Keyboard selection guide 88

IC Ideas

Check parity of noisy signals . . . . . Roy W. Lewallen 92
FM demodulator . . . . . Robert L. Wilbur 92
IC array as an adjustable Zener . . . . . .Walter Jung 94

October

Time to grow up, Peter Pan . . . . . Alberto Socolovsky 7
Guide to flexible circuits 17
Relays: form versus function. . . . . .Stephen A. Thompson 28
Reed relays - the middleman fills the bill . . . . . James B. Brown 35
Data communications: a new breed? . . . . . .Dr. William H. Melody DC-3
Data terminals: Part 2 . . . . . .Arthur J. Boyle DC-7
Selecting the right modem . . . . . .Robert Toombs DC-8
Improving throughput with error control techniques . . . . . .K.I. Nordling DC-10
Time vs frequency: two approaches to multiplexers . . . . . Willard S. Jones DC-11
What you should know about mux's . . . . . M. Noradoukian DC-13
Data concentrators . . . . . Don Alusic DC-17

IC Ideas

Linearized TTL inverter makes bandpass amplifier. . . .Charles A. Herbst 68
Load enable and data strobe circuit . . . . . .Robert A. Dougherty 68
Position detector with direct TTL interface . . . . . Petr Obrda 69
A simple power-on reset circuit . . . . . .James O. Farmer 69

November

A nontechnical development of extraordinary of technical significance . . . . . Alberto Socolovsky 7
Microwave semiconductor power generators 17
DVMs revisited . . . . . Stephen A. Thompson 31
Data communications - A spectrum marketplace? . . . . . Walter Hinchman DC-3
Data terminals - Part 4 . . . . . Arthur J. Boyle DC-7
Teletypewriter terminals . . . . . J. Lee Wakefield DC-8
Alphanumeric CRT terminals . . . . . Troy S. Adcox DC-9
The touch-tone terminal audio response system . . . . . Joel Naive DC-12

IC Ideas

Latch circuit provides noise immunity . . . . . S.R. Martin 58
Multivibrator covers 1 Hz to 1 MHz . . . . . Richard T. Scarpulla 58
Pulse differentiation with DTL gates . . . . . Norton Markin 60
Polarity inverter uses a dc voltage . . . . . Curtis Sewell 60

December

1971--A sample of the decade . . . . . Alberto Socolovsky 6
Memories: the users speak out . . . . . Stephen A. Thompson 25
The interconnection crisis . . . . . Sang Whang DC-3
Data terminals: Part 5 . . . . . Arthur J. Boyle DC-5
Facsimile communication . . . . . Dave Klein DC-6
Ink jet printing . . . . . James Stone DC-9

IC Ideas

A simple FSK receiver . . . . . Don Kesner 56
Digital frequency separator . . . . . Leroy Young Jr. 56
Line receivers with zero differential input . . . . . Dale Pippenger 58

Subject Index

		Month & Page No.
Careers		
Appointment in Washington	Neil R. Regeimbal	5-25
RX for an ailing industry: keep it simple	John McNichol	3-25
There is an EE in the White House	John McNichol	6-27
Will EEs join the war on pollution?	John McNichol	7-33
Charts and Nomographs		
Antenna selection chart		9-49
Designer's guide to multilayer board		4-17
Guide to air moving devices		2-17
A guide to high value capacitors		5-17
Keyboard selection guide		9-88
Microwave semiconductor power generators		11-17
OP AMP charts go on-line	A. Boyle, L. Rothstein, D. Wilkins	7-21
Speed/power chart for digital ICs	Lynda Rothstein	6-24
Update '71: Oscillators and function generators at a glance	Sheldon Edelman	8-25
Communications		
Antenna selection guide		9-49
Cable communications: The Los Gatos experiment	Sheldon Edelman	6-41
Data collection: registering retail sales without bells	Sheldon Edelman	5-47
Data terminals: a 5-Part Course -- Part 1		
Battle of the bits	Alberto Socolovsky	8-DC-6
Data communications: Getting it from here to there	Arthur J. Boyle	8-EC-9
Regulation reoriented	Bernard Strassburg	8-DC-3
Data Terminals -- Part 2	Arthur J. Boyle	9-DC-5
Character generation using MOS read-only memories	Richard M. Eiler	9-DC-6
Design opportunities for EEs	Stuart L. Mathison	9-DC-3
How the ROM generates characters	Richard R. McCoy	9-DC-9
Integrated line drivers and receivers	Dale Pippenger	9-DC-13
Keyboard considerations for design engineers	Don Arnett & Du Wayne Pople	9-DC-18
Magnetic tape for data terminals	R.H. Kearns	9-DC-14
The monolithic keyboard encoder	Frank Yoerg	9-DC-16
Select the right CRT for alphanumeric data terminals	A.D. Johnson	9-DC-10
EBS amplifiers debut	Sheldon Edelman	2-52
Keyboard selection guide		9-88
1971: the year of conversion	Staff report	1-21
Quadrature filters: what they are and what they do	Martin A. Weiner	9-35
Data Terminals -- Part 3	Arthur J. Boyle	10-DC-7
Data communications: a new breed?	Dr. William H. Melody	10-DC-3
Data concentrators	Don Alusic	10-DC-17
Improving throughput with error control techniques	K.I. Nordling	10-DC-10

Data Terminals -- Part 3 (cont'd)

Selecting the right modem . . . . . Robert Toombs 10-DC-8
Time vs frequency: two approaches to multiplexers . . . . . Willard S. Jones 10-DC-11
What you should know about mux's . . . . . M. Noradoukian 10-DC-13

Data Terminals -- Part 4 . . . . . Arthur J. Boyle 11-DC-7
Alphanumeric CRT terminals . . . . . Troy S. Adcox 11-DC-9
A spectrum marketplace? . . . . . Walter Hinchman 11-DC-3
Teletypewriter terminals . . . . . J. Lee Wakefield 11-DC-8
The touch-tone terminal audio response system . . . . . Joel Naive 11-DC-12

Data Terminals -- Part 5 . . . . . Arthur J. Boyle 12-DC-5
Facsimile communication . . . . . Dave Klein 12-DC-6
A firmware approach to data adapters . . . . . Paul Wolf 12-DC-11
Ink jet printing . . . . . James Stone 12-DC-9
The interconnection crisis . . . . . Sang Whang 12-DC-3

Computers & Peripherals
Data collection: registering retail sales without bells . . . . . Sheldon Edelman 5-47

Data Terminals: a 5-Part Course - Part 1
Battle of the bits . . . . . Alberto Socolovsky 8-DC-8
Regulation reoriented . . . . . Bernard Strassburg 8-DC-3
Getting it from here to there . . . . . Arthur J. Boyle 8-DC-9

Data Terminals -- Part 2 . . . . . Arthur J. Boyle 9-DC-5
Character generation using MOS read-only memories . . . Richard M. Eiler 9-DC-6
Now the ROM generates characters . . . . . Michael R. McCoy 9-DC-9
Select the right CRT for alphanumeric data terminals . . . A.D. Johnson 9-DC-10
Integrated line drivers and receivers . . . . . Dale Pippenger 9-DC-13
Magnetic tape for data terminals . . . . . R.H. Kearns 9-DC-14
The monolithic keyboard encoder . . . . . Frank Yoerg 9-DC-16
Keyboard considerations for design engineer. . . . . Don Arnett & Du Wayne Pople 9-DC-18

Data Terminals -- Part 3 . . . . . Arthur J. Boyle 10-DC-7
Data communications: a new breed? . . . . . Dr. William H. Melody 10-DC-3
Data concentrators . . . . . Don Alusic 10-DC-17
Improving throughput with error control tecniques . . . . K.I. Nordling 10-DC-10
Selecting the right modem . . . . . Robert Toombs 10-DC-8
Time vs frequency: two approaches to multiplexers . . Willard S. Jones 10-DC-11
What you should know about mux's . . . . . M. Noradoukian 10-DC-13

Data Terminals -- Part 4 . . . . . Arthur J. Boyle 11-DC-7
Teletypewriter terminals . . . . . J. Lee Wakefield 11-DC-8
Alphanumeric CRT terminals . . . . . Troy S. Adcox 11-DC-9
The touch-tone terminal audio response system . . . . . Joel Naive 11-DC-12

Data Terminals -- Part 5	Arthur J. Boyle	12-DC-5
A firmware approach to data adapters	Paul Wolf	12-DC-11
Ink jet printing	James Stone	12-DC-9
The interconnection crisis	Wang Whang	12-DC-3
Keyboard selection guide		9-88
1971: the year of conversion	Staff Report	1-21
Speed up card tests with a computer	Richard J. Sungaila	5-67
Memories: a new 7 part course -- Part 1	Stephen A. Thompson	2-45
The memory of a box		2-48
Varieties of storage		2-46
Memories Course: Types of memory -- Part 2	Stephen A. Thompson	3-30
Classification of memories...	Philip Harding, Richard Bravo & Andres Lucero	3-39
Shift registers as memories	Dale A. Mrazek	3-43
Memories: Magnetic mainframes -- Part 3	Stephen A. Thompson	4-45
Linear transformer ROM	J. Furst	4-54
Magnetic film memories	C.M. Lekven	4-50
Core: the mainframe standard	Chris Maeder	4-45
Plated wire	Paul Zakarian	4-47
Memories: Mainframes -- Part 4	Stephen A. Thompson	5-53
Hybrid: The best of both worlds	D. Lund & T. Kewi	5-61
Optical ROMs	Robert L. Burr	5-63
M-dimensional, N-wire organizations	Ed Lindell	5-53
Semiconductor memories	Leslie L. Vadasz, H.T. Chua & A.L.Grove	5-56
MOS memories	Warner R. Bridwell	5-58
Memories: Bulk storage - Part 5	Stephen A. Thompson	6-49
Domain wall memory	Berne D. Broadbent	6-58
Dynamic MOS RAMs for bulk memories	B.D. Broeker	6-57
Magnetic discs	William Bertrando	6-53
Magnetic tape	Edward S. Kinney	6-51
Optical/thermal mass-memory	Harold Dell	6-52
Paper tape		6-50
Punched paper cards	Dr. J.A. Carlson	6-49
The silicon drum	Dale A. Mrazek	6-55
Memories: Putting them all together -- Part 6	Stephen A. Thompson	7-43
Interfacing with memories	Dale Pippenger	7-47
Memories in displays	A. Maurer	7-49
Minicomputers and controllers	Stephen A. Kallis, Jr.	7-51
Paged hierarchial memories		7-45
ROMs as logic	John Linford	7-53
Segmented hierarchial memories	R.V. Bock	7-43
Memories: Future storage techniques -- Part 7	Stephen A. Thompson	8-33
Picking the winning technologies	Jack A. Morton	8-33
Magnetic bubbles	Andrew H. Bobeck	8-36

Instruments and Measurements

Crash, bang, it still works . . . . . John E. Hickey, Jr. 3-57
DVMs revisited . . . . . Stephen A. Thompson 11-31
Speed up card tests with a computer . . . . . Richard J. Sungaila 5-67
Update '71. Oscillators and function generates at a glance . . . . . Sheldon Edelman 8-25

Integrated circuits

Diaphragm connection--a new package for complex ICs- Alberto Socolovsky 2-27
ICs to interface data terminals 12-DC-18
OP AMP charts go on-line . . . . . A. Boyle, L. Rothstein, D. Wilkins 7-21
Powering your ICs . . . . . John E. Hickey, Jr. 4-59
Speed/power chart for digital ICs . . . . . Lunda Rothstein 6-24
What's available in MSI? . . . . . Larry Beck & Walter Richard 1-25
The year in MOS 2-63
Memories: the users speak out . . . . . Stephen A. Thompson 12-25
EBS amplifiers debut . . . . . Sheldon Edelman 2-52

New Direction

1971: the year of conversion . . . . . .Staff report 1-21
Data collection: registrating retail sales without bells . . . . . Sheldon Edelman 5-47
Cable communications: the Los Gatos experiment . . . . Sheldon Edelman 6-41
The great video cartridge race. . . . . A. Boyle & J. McNichol 2-38
Will EEs join the war on pollution? . . . . . John McNichol 7-33
Rx for an ailing industry: keep it simple . . . . . John McNichol 3-25

Packaging

Crowding the gas readout tube 3-30
Designer's guide to multilayer board 4-17
Diaphragm connection--a new package for complex ICs. Alberto Socolovsky 2-27
Guide to air moving devices 2-17
They've got connections . . . . . Smedley B. Ruth 6-29

Passive Components

A guide to high value capacitors 5-17

Giant step for power supplies . . . . . John E. Hickey, Jr. 4-38
Powering your ICs . . . . . John E. Hickey, Jr. 4-59
Crowding the gas readout tube 3-30
Keyboard selection guide 9-88
More capacitance, less volume: an international story . . . . . Alberto Socolovsky 9-20
Quadrature filters: what they are and what they do... Martin A. Weiner 9-35
Reed relays - the middleman fills the bill . . . . . James B. Brown 10-35
Relays: form versus function . . . . . Stephen A. Thompson 10-28

Data Acquisiton and Processing

Cable communications: the Los Gatos experiment . . . . . Sheldon Edelman 6-41
Computer control comes to network testing . . . . . Arthur J. Boyle 6-46
Data collection: registering retail sales without bells . Sheldon Edelman 5-47
Speed up card tests with a computer Richard J. Sungaila 5-67
Quadrature filters: what they are and what they do Martin A. Weiner 9-35

Digital Design

Memories: a new 6-part course -- Part 1 . . . . . Stephen A. Thompson 2-45
Inside the black box . . . . . Donald H. Gibson 2-48
The memory as a black box 2-48
Varieties of storate 2-46

Memories: Types of memory -- Part 2 Stephen A. Thompson 3-39
Classification of memories . . . . . Philip Harding, Richard Bravo and Adres Lucero 3-39
Shift registers as memories . . . . . Dale A. Mrazek 3-43

Memories: Magnetic mainframes -- Part 3 . . . . . Stephen A. Thompson 4-45
Core: the mainframe standard . . . . . Chris Maeder 4-45
Plated wire . . . . . Paul Zakarian 4-47
Magnetic film memories . . . . . C.M. Lekven 4-50
Linear transformer ROM . . . . . J. Furst 4-54

Memories: Mainframes -- Part 4 . . . . . Stephen A. Thompson 5-53
M-dimensional, N-wire organizations . . . . . Ed Lindell 5-53
Semiconductor memories . . . . . H.T. Chua & A.S.Grove 5-56
MOS memories . . . . . Warner R. Bridwell 5-58
Hybrid: The best of both worlds . . . . . D. Lund & T. Kwei 5-61
Optical ROMs . . . . . Robert L. Burr 5-63

Memories: Bulk storage -- Part 5 . . . . . Stephen A. Thompson 6-49
Punched paper cards . . . . . Dr. J.A. Carlson 6-49
Paper tape 6-50
Magnetic tape . . . . . Edward S. Kinney 6-51
Optical/thermal mass-memory . . . . . Harold Dell 6-52
Magnetic discs . . . . . William Bertrando 6-53
The silicon drum . . . . . Dale A. Mrazek 6-57
Dynamic MOS RAMs for bulk memories . . . . . B.D. Broeker 6-57
Domain wall memory . . . . . Berne D. Broadbent 6-58

Memories: Putting them all together -- Part 6 . . . . Stephen A. Thompson 7-43
Segmented hierarchial memories . . . . . R.V. Bock 7-43
Paged hierarchial memories 7-45
Interfacing with memories . . . . . Dale Pippenger 7-47
Memories in displays . . . . . A. Maurer 7-49
Minicomputers and controllers . . . . . Stephen A. Kallis, Jr. 7-51
ROMs as logic . . . . . John Linford 7-53

Memories: Future storage technicues -- Part 7 . . . . Stephen A. Thompson 8-33
Picking the winning technologies . . . . . Jack A. Morton 8-33
Magnetic bubbles . . . . . Andrew H. Bobeck 8-36

Speed/power chart for digital ICs . . . . . Lynda Rothstein 6-24
What's available in MSI? . . . . . Larry Beck & Walter Richard 1-25